

PUBLIC UNDERSTANDING AND EVALUATION OF INFORMATION RELATED TO OBESITY HEALTH RISKS IN SWEDEN AND MALAYSIA

Azirah Hashim^{a+}
Aliyyah Nuha Faiqah Azman Firdaus^a
Nataliya Berbyuk Lindström^b
Elisabeth Ahlsén^b
Pavel Rodin^b
Yee Chee Leong^a
Ali Attaran^c
Maya Khemlani David^a
Jens Allwood^b

^aUniversity of Malaya, Malaysia

^bUniversity of Gothenburg, Sweden

^cMAPNA Group, Iran

⁺Corresponding Author: azirahh@um.edu.my

Abstract

This study examines and compares the awareness of weight-related issues of Swedes and Malay Malaysians, as well as attitudes to health risks related to being obese and preferences for and evaluation of different information channels. A questionnaire was distributed to respondents from these two socio-culturally distinct countries and the responses were analyzed using descriptive statistics. The findings of the study show both similarities and differences between Swedes and Malay Malaysians. Respondents in both countries show an awareness of where to turn to for information and the health problems linked to obesity. Both similarities and differences are found in preferences for information sources and usefulness of information. In the Swedish data, social media, family and friends and expert talks were considered both easy to understand and trustworthy and the information obtained from these sources is evaluated as very useful while blogs were seen as easy to understand but not trustworthy. In the Malaysia data, blogs, Youtube/Vimeo and social media are considered the easiest to understand but less likely to be trustworthy. In both countries, public health care institutions and governmental agencies are rated as trustworthy, but low in understandability. In Malaysia, expert talks to the public and private institutions are also seen as trustworthy. Daily newspapers, leaflets, radio/TV, and alternative medicine is seen as neither easy to understand nor trustworthy by the respondents in both countries. The outcomes of this study provide insights into the obesity attitudes of Swedes and Malaysians and their preferences for information sources. The results can contribute towards better understanding of cultural influences in the planning of health services in both countries.

Keywords: obesity, Sweden, Malaysia, information sources, trust, culture

Introduction

In Sweden and in Malaysia, as in other countries, health problems related to overweight and obesity are growing. Public awareness of health issues and ability to critically take part of

information from multiple information sources dealing with food intake, weight and health is therefore increasingly important for preventing and treating obesity. Information can be gained from government and health care institutions, newspapers, Internet pages, social media etc. The Internet in general, and social media in particular are growing resources for health information, which are reshaping traditional health care by offering constant, cost-effective support for people.

According to Seidel and Halberstadt (2015), the global figure for obesity and overweight is approximately 30 per cent of the population and in 2030 it may have increased even to about 50 per cent. This causes an increasing prevalence of a number of obesity related illnesses – a global problem (Gallus et al., 2015). A closer look at the statistics for the two countries in this study (Sweden and Malaysia) reveals that the number of obese Swedes is about 14 per cent and rising, the number for overweight is 50 per cent for men and about 33 per cent for women.

Statistics for Malaysia, (WHO report in 2010) reported that it was the country with the highest percentage of obese people in the ASEAN region. Almost 45 per cent of Malaysian men and almost half of the women are overweight or obese. Childhood obesity rates are on the rise from less than 10 per cent ten years earlier to almost 14 per cent in 2008 with increasing numbers of diabetes, hypertension and obesity related illnesses (The Malaysian Insider, 2014).

Since a healthy lifestyle depends on continuous choices in everyday life, it is important to try to understand what can influence these choices, i.e. how people acquire and apply information about health and health risks. This is a complex individual process in different situations of life with different influencing factors. Healthy choices require information. ‘Health literacy’ is a term used for how people acquire, understand and use health information, leading to practical effects on their health, according to WHO (2013) (cf. also Wagner et al., 2009; Mårtensson and Hensing, 2012). The ability to handle the flow of relevant information, the ability to decide what information can be trusted and what cannot and the ability to understand what information can be applied generally versus in specific cases depends on critical evaluation of sources (Grönlund, 2014).

Three relevant background facts for studying health literacy are (i) the flow of information about health, food and exercise that reaches people today, (ii) the difficulty in deciding which information is trustworthy and which is propaganda or commercial advertising in disguise, and (iii) the difficulty in deciding what information is generally applicable and what is correct information concerning a specific individual case. It appears important to provide not only information, but also abilities to critically evaluate information and identify reliable sources of advice as well as tailored information targeting specific needs.

In general, studies of places where health information is found suggest that it is in school, from parents and from health care staff, but also increasingly from the internet (blogs, online journals, social media, YouTube), radio and TV (cf. Brown et al., 2007; Rich, 2011; Kim and Yon 2012; Chang et al., 2013; Chou et al., 2014; Corcoran and Renwick, 2014). At the same time, the Internet is today the most easy to use, but also provides much incorrect information. The Internet overwhelms users with information, which can be confusing and difficult for many to evaluate as trustworthy or not. Thus, the issue of deciding which information is trustworthy is becoming more and more important (cf. Grönlund, 2014).

Research aims

The purpose of this study is to investigate the awareness of health risks and the preference for and evaluation of different sources of information about health and obesity in Sweden and Malaysia, as representing two widely different societies, in order to address a global problem from two local perspectives.

The specific aims of this study are:

- to examine the Swedes and Malay Malaysians' awareness of weight-related issues such as Body Mass Index (BMI), knowledge and use of weight-related diets and health risks related to being obesity
- to examine the Swedes and Malay Malaysians' preferences for sources of information about weight-related diets and exercises and their evaluation of these sources in terms of understandability, trustworthiness and usefulness of information provided

Potentially influencing factors such as gender, level of education, and self-estimated weight are taken into account.

Methodology

This study employed a mixed method approach (a combination of quantitative and qualitative) where the quantitative element was extracted from the questionnaire and analysed using descriptive statistics while the qualitative was represented by defining the taxonomies of categories found in the open-ended section of the questionnaire.

Procedures

A questionnaire was distributed to respondents from these two socio-culturally distinct countries and the responses were analyzed using descriptive statistics. A questionnaire which consisted of 21 open and closed questions (see Appendix 1) was piloted with about 30 Swedish and 30 Malaysian respondents and appropriately modified in terms of format and sequencing of questions.

In Sweden, data collection was done via the Internet, by distributing a link with the questionnaire to a number of convenience sampled Facebook groups, with an invitation to participate in the study. The selected Facebook groups included groups focused on different hobbies, sport, health and travelling, dieting and exercising, buying/selling, different occupations, home interior, politics and job searching, thus reaching a wide variety of potential respondents i.e. applying snowball sampling via Facebook (cf. Baltar and Brunet, 2012). The data collection in Sweden was done in line with ethical guidelines for social science research. In Malaysia, the questionnaire, which was in both digital and paper formats was distributed via convenience sampling at a university campus and through various forms of social media such as Facebook and Twitter. The University of Malaya Research Ethics Committee-Non Clinical approved the questionnaire and prior consent was sought from the respondents during data collection and procedures followed.

Thus, although the samples cannot be treated as representative random samples of the Swedish and Malaysian population, based on the findings of earlier research, they can be considered representative of a group of people in Sweden and Malaysia, who generally come from urban areas and who actively engage in the use of social media.

Participants

In Sweden, a total of 185 people participated in the study and reported were living in Sweden and having Swedish as their first language (100 women and 85 men). In Malaysia, 200 people (100 male and 100 female respondents) responded either to the English or Malay version of the questionnaire. As the Malaysian sample consisted of only Malays who make up about 60 per cent of the population in Malaysia, this study therefore cannot be generalized to all Malaysians, which also include Chinese (25 per cent), Indians (8 per cent) and other indigenous ethnic groups (7 per cent) (Department of Statistics Malaysia, 2012).

Table 1: Demographic profile of participants: Gender, Age, Education level, Weight status

Respondent characteristics	Sweden	Malaysia
N (total sample size)	185	200
Gender n, (per cent)		
Male	85 (45.9)	100 (50)
Female	100 (53.1)	100 (50)
Age range n, (per cent)		
Under 30 (0-30)	61 (33)	156 (78)
Above 30 (31 and above)	124 (67)	40 (20)
Education level n, (per cent)		
Below university	107 (58)	53 (26.5)
University degree and higher	78 (42)	146 (73)
Self estimate on body weight n, (per cent)		
Underweight/normal	118 (64)	113 (56.5)
Overweight/obese	67 (36)	83 (41.5)

As can be seen in Table 1, the Malaysian Malays sample has more young respondents than the Swedish sample. There is almost an equal distribution of gender in both samples. The Malaysian Malays sample includes more university degree respondents than the Swedish sample. The body weight was underweight/normal a little over 50 per cent with underweight/normal weight (56.5 per cent for the Malaysian Malays sample and 64 per cent for the Swedish sample). The Malaysian Malays sample is also slightly more overweight (41.5 per cent) than the Swedish sample (36 per cent). The data for the Malaysian sample does not always sum up to 100 per cent, as not all participants filled in their data for all variables.

Analysis

The questions in the questionnaire focus on 2 themes:

- Awareness of health risks related to being overweight/obesity
- Preferences for information sources and evaluation of these sources

Responses to the yes-no and multiple-choice questions were calculated using Excel, taxonomies of categories were made for the analysis of the responses to the open questions, based on the semantic similarity of the given responses.

Results

Awareness of health risks related to being overweight/obesity, body mass index (BMI), knowledge and experiences of weight-related diets

The responses to the open question about health risks related to obesity are shown in Tables 2(a) and 2(b).

Table 2 (a): Health problems linked to obesity in Sweden

Health risks	Rank	Sweden	
		N of replies for each category	per cent of total replies
Heart disease	1	169	13
High blood pressure	1	168	13
Diabetes	1	165	13
Depression	2	151	12
Sleeping problems	3	139	11
Infertility	4	131	10
Irregular periods	5	114	9
Arthritis	6	66	5
Asthma	6	69	5
Breast cancer	7	48	4
Migraine	7	51	4
Grand total		1271	100

Table 2 (b): Health problems linked to obesity in Malaysia

Health risks	Rank	Malaysia	
		N of replies for each category	per cent of total replies
Diabetes	1	168	21
High blood pressure	2	161	20
Heart disease	3	151	18
Depression	4	86	10
Irregular periods	5	54	7
Infertility	6	49	6
Sleeping problems	7	36	4

Health risks	Rank	Malaysia	
		N of replies for each category	per cent of total replies
Arthritis	7	34	4
Asthma	7	28	4
Migraine	8	21	3
Breast cancer	9	14	2
Grand total		802	100

In general, the respondents in both countries show a high awareness of risks related to being overweight/obese. As can be seen from Tables 2(a) and 2(b), heart disease, high blood pressure and diabetes and depression rank the highest in both countries. In terms of differences, the Swedes mention sleeping problems and infertility more frequently than the Malaysian Malays. When asked about BMI (Body Mass Index), the vast majority of the respondents in both countries know what BMI is i.e. 99 per cent in Sweden and 96 per cent in Malaysia. Of that majority, more than 80 per cent of people in Sweden and 83 per cent in Malaysia know what their own BMI is (see Table 3).

Table 3: Do Swedes and Malaysian Malays know their own BMI?

	Sweden		Malaysia	
	per cent Yes	per cent No	per cent Yes	per cent No
Total	81	14	83	15.7
Gender				
Women	86	14	85	15
Men	74	26	83.6	16
Weight				
Underweight/ Normal weight	78	22	86	14
Overweight/ obese	85	15	82	18

However, it is notable that the level of knowledge of the diets Glycaemic Index/Glycaemic Load (GI/GL) and Low Carbohydrate High Fat Diet (LCHF) differs markedly with only a total of 11.7 per cent and 9.6 per cent in the Malaysian Malays sample who know what GI/GL and LCHF are, compared to 90 per cent and 98 per cent in the Swedish sample.

The percentage of those who eat according to the plate model in Sweden is 25 per cent and 20.5 per cent among Malaysian Malays. (see Table 4). The plate model is divided into three parts, whereas two of the parts are big sized (filled with vegetables and root vegetables and carbohydrates such as pasta, rice, potatoes or bread) and the third part is small filled with proteins such as fish, meat, eggs or legumes.

Table 4: Do Swedes and Malaysian Malays eat according to the plate model?

	Sweden		Malaysia	
	per cent Yes	per cent No	per cent Yes	per cent No
Total	25	75	20.5	76
Gender				
Women	29	14	27	73
Men	20	80	16	84
Weight				
Underweight/ Normal weight	27	73	23	77
Obese	21	79	20	80

Another question explored use of weight related diets. Half of the Malaysian Malays respondents had tried a weight-related diet with equal numbers of males and females. In Sweden, 47 per cent of the males and 72 per cent of the females had tried a weight-related diet. Among the ones who had tried a weight-related diet, 54.3 per cent of the Malaysian Malays and 75 per cent of the Swedes were from the overweight and obese group.

Preferences for and evaluation of information sources

The majority of respondents (91 per cent) report knowing where to turn to for information if they need advice concerning diets and/or exercise. In Table 5, the preferences of the respondents are presented. The information sources are grouped in accordance to the ranking from highest to lowest.

Table 5: Preferences for information sources

	Sweden (per cent)	Malaysia (per cent)
1	Family and friends (74)	Family and friends (86)
2	Social media (71)	Blogs (79) Radio/TV (79)
3	Journal articles (66)	Social media (78)
4	Blogs (64)	Journal articles (74)
5	Expert talks (60)	YouTube/Vimeo (73)
6	Radio/TV (43)	Leaflets (69)
7	YouTube/Vimeo (42)	Newspapers (68)
8	Alternative medicine (30)	Public institutions (62)
9	Government agencies (28)	Expert talks (58)
10	Public institutions (26)	Governmental agencies (55)
11	Private institutions (24)	Private institutions (52)
12	Newspapers (21)	Traditional medicine (50)
13	Leaflets (22)	

The Malaysian and Swedish samples are similar in that they have the same types of preferred information sources. Family/friends, social media, journal articles and blogs rank as the most preferred sources for both. Government agencies and public and private institutions rank among the lowest in both countries. Differences can, however, be seen in the preference for leaflets, newspapers and radio/TV where Malaysian Malays show a much higher preference for these sources than Swedes.

Table 6(a): Ease of understanding and trustworthiness in Sweden (the 5 highest ranked in bold)

Source	Easy to understand	Trustworthy
	Sweden	Sweden
Public institutions	5 per cent	13 per cent
Private institutions	3 per cent	8 per cent
Government agencies	5 per cent	11 per cent
Daily newspapers	5 per cent	1 per cent
Journals	12 per cent	9 per cent
Leaflets	2 per cent	1 per cent
Blogs	14 per cent	7 per cent
Expert talks in public	11 per cent	15 per cent
Radio/TV programs	5 per cent	3 per cent
Family/friends	12 per cent	11 per cent
YouTube/Vimeo	7 per cent	3 per cent
Social media	14 per cent	12 per cent
Traditional (alternative) medicine	5 per cent	6 per cent

Table 6(b): Ease of understanding and trustworthiness in Malaysia (the 5 highest ranked in bold)

Source	Easy to understand	Trustworthy
	Malaysia	Malaysia
Public institutions	8.7 per cent	17.2 per cent
Private institutions	6.9 per cent	11.4 per cent
Government agencies	6.5 per cent	13.5 per cent
Daily newspapers	8.3 per cent	6.3 per cent
Journals	7.0 per cent	10.8 per cent
Leaflets	6.9 per cent	3.8 per cent
Blogs	11.0 per cent	3.8 per cent
Expert talks in public	7.6 per cent	9.1 per cent
Radio/TV programs	7.2 per cent	5.3 per cent
Family/friends	8.0 per cent	6.6 per cent
YouTube/Vimeo	9.6 per cent	4.5 per cent
Social media	9.3 per cent	3.1 per cent
Traditional (alternative) medicine	3.0 per cent	4.7 per cent

In Sweden (see Table 6(a)), expert talks in public, family and friends, and social media were seen as both trustworthy and easy to understand, while public institutions and government agencies were trustworthy, but not easy to understand and journals and blogs were easy to understand, but not trustworthy.

In Malaysia (see Table 6(b)), only public institutions were seen as both trustworthy and fairly easy to understand. Newspapers, blogs, YouTube/Vimeo and social media were seen as easy to understand, but not trustworthy. Private institutions, government agencies, journals and expert talks were seen as trustworthy but not easy to understand.

The participants were asked to evaluate the information about diets and exercises obtained from different sources, presented in Table 7:

Table 7: Usefulness of information; ranked list in order of usefulness. The numbers are presented in the table as means of rankings on a 5 step Likert scale, from 1 (least useful) to 5 (most useful).

Information	Means total	
	Sweden	Malaysia
Public institution	2.17	4.02
Government agencies	2.18	3.99
Private institution	2.18	3.88
Expert talks	2.97	3.79
Journal articles	2.85	3.68
Newspaper	1.96	3.58
Radio/TV programs	2.40	3.55
Family/friends	3.00	3.48
Leaflets	2.04	3.35
Blogs	2.95	3.26
YouTube/Vimeo	2.52	3.13
Social media	3.14	3.08
Alternative (traditional) medicine	2.13	2.99

For Sweden, social media, family/friends, expert talks, blogs and journal articles are considered to provide the most useful information, while newspapers, leaflets, alternative medicine and public/private healthcare institutions as well as governmental agencies rank lowest. For Malaysian Malays, public institutions, government agencies, private institutions, expert talks and journal articles rank the highest in terms of usefulness of information. Lowest ranked for the Malaysian Malays are You Tube/Vimeo, social media and traditional/alternative medicine.

Respondents were asked some open-ended questions concerning governmental agencies and the answers are given below. The questions concerned whether the respondents had read anything provided by governmental agencies concerning what to eat and if so, where, if it was easy to understand and if it was useful or not (plus motivation). They also concerned if the respondents applied the advice and if so they were asked to give examples. Further questions concerned what information influenced the respondents the most, how it influenced them, and what would make them change their eating habits.

In answering the question ‘*Have you read anything provided by governmental agencies on what you should eat?*’, there were 84 *Yes* responses (52.4 per cent) from Sweden and 94 *Yes* responses (47 per cent) from Malaysia.

The following question asked whether it was easy to understand the information. The majority of both groups, who had read official information found it easy to understand, a total of 74 for Sweden and 76 for Malaysia. To the question ‘*Was the information you read from government agencies useful for you?*’ the respondents could add none, one or more than one specifications.

In terms of usefulness of information, the Malaysian Malays mentioned that the materials were informative and easy to understand and Swedes listed responses such as ‘useful’ for information about food contents, information in the debate and ‘useful’ for food and health recommendations and clear information. Responses from the Swedes, who chose to specify/motivate their responses are listed below:

Positive (yes-responses):

- Useful for facts about food contents, facts in the debate (14)
- Useful for food and health recommendations (6)
- Clear information (5)
- You can read them and do the opposite to be healthy (2)
- No specification given (2)

Negative (no-responses) were specified as being:

- Outdated (15)
- Wrong (13)
- Biased/Can not be trusted/Commercial (7)
- Would make me ill/more ill /Dangerous for certain diagnoses (7)
- Don’t know/ Yes and no / Maybe/ (6)
- Not written by experts (4)
- Too general (3)
- Difficult to understand/Boring/Unclear (3)
- Already know the information (2)

The Malaysian Malays listed the below responses:

- Informative (32),
- Easy to understand (14)
- Other (21) e.g.: Advice from my mother, Unsure, As a health guideline, From an accurate source

However, among the Swedes who actually read information from government agencies, there were many negative comments, as can be seen above. Two of those who found the information useful even claim that they did so, because you can do the opposite (of what the agencies advice) to be healthy. *Outdated, wrong, not expert, too general, not trustworthy, dangerous, and difficult* are some of the negative judgments. On the other hand, the lower number of respondents who found the information useful, appreciated that they could look up recommendations for healthy food and especially the contents of different types of food and also thought the information was clear. This looks like contradictory opinions and that is probably precisely what it is. The responses can be directly linked to the ongoing Swedish debate on what is healthy food, where many of our respondents seem to be adherents of the LCHF (low carbohydrate high fat) type of diet, while the government agency web pages stick

to their low fat and varied food recommendations, which also a minority of our respondents do, some of which have used the information in their professions.

As to whether they act on these sources, the Malaysian Malays in general reported taking action, being more compliant compared to the Swedes (Table 8). For the Malaysian Malays, those with no university education tended to be more compliant (77.2 per cent compared to 52 per cent) while for the Swedes, no significant difference could be observed (19 per cent compared to 25 per cent).

Table 8: Following advice

	Sweden		Malaysia	
	per cent Yes	per cent No	per cent Yes	per cent No
Age groups				
Under 30	36	64	56.9	43
30 and above	25	175	60.8	39.1
Gender				
Women	18	82	52	48
Men	26	74	64.4	35.6
Education				
Low	19	81	77.2	22.7
High	25	75	52	47.9
Weight				
Low/normal	26	74	58.3	41.7
High	15	85	54.5	45.4

Some examples of how the information was applied by the Swedes and Malaysian Malays in response to following advice from these sources are listed below:

Applications by the Swedes:

- Eating what the body needs (14)
- Vegetarian food (4)
- No sugar (4)
- No salt (4)
- Exercise (3)
- The plate model (2)
- Ecological food (2)
- Food during pregnancy (2)
- Food for children (2)
- How often you can eat fish (1)
- No fat (1)
- Do not follow advice (4)

Applications by the Malaysian Malays:

- Diet (33)
- Exercise (6)
- Pregnancy (2)
- Other (6) eg: Follow what have been suggested, Always look after your health

The Malaysian Malays and Swedes differed greatly in citing factors that would make them change their eating habits. While for the Malaysian Malays, the main factors would be *health* (N=64), and *weight and physical concerns* (N=40), the Swedes mentioned *provision of new information* (N=39), *health consciousness* (N=37) and *psychological factors* (N=34) as main reasons. Other factors for the Malaysian Malays included *familial and religious concerns*, for the Swedes *consequences of being overweight* (N=13) and *the working conditions or consequences of these conditions*. (N=12). (170 Malaysians (85 per cent) and 150 Swedes (81 per cent) answered this open question.

Discussion and Conclusion

The findings of the study show that the respondents in both samples have a high awareness and knowledge of the risks of being overweight/obese. Heart disease, high blood pressure, diabetes and depression were the most chosen alternatives. This probably reflects the results of the Swedish public health policy on awareness-raising in the population (Public Health Agency of Sweden, 2013). Also in Malaysia, there has been an effort to raise the awareness of the public concerning being overweight or obese, the Ministry of Health Malaysia has organized a series of campaigns on, for example, the importance of carrying out health checks, counseling sessions by nutritionists and the *Komuniti Sihat Perkasa Negara* [Healthy Community makes a Strong Country] program which is an intervention program for those who are obese (Ministry of Health Malaysia, 2015; Toon, 2014). The issue of obesity remains a global problem, because it has a significant impact on the health index, affecting development in many areas: economic, socio-cultural and mortality/survivability of civilizations in the modern world.

The majority of the Swedish respondents were well informed concerning specific diets, ‘the plate model’ and weight-related and weight loss terminology (BMI, LCHF, GI/GL). As many Swedish respondents also report being on a diet for weight loss, this explains their awareness of weight-related issues. Most of the Malaysian Malay participants knew their own BMI, but a vast majority were not familiar with terms for specific diets related to weight loss, such as LCHF and GI/GL. This indicates that these terms (LCHF, GI/GL) are more frequently used in Sweden than in Malaysia, perhaps because of a greater focus on diets for weight loss in the media.

In both samples, the women tend to be more concerned and aware of health issues with more of them reporting that they know their BMI compared to the male respondents. In addition, not surprisingly, the respondents with self-reported overweight/obesity conditions use weight-related diets more than the normal/underweight respondents. This reflects a general trend of women being more concerned about their appearance; body dissatisfaction is ubiquitous among girls and women (Robert-McComm, Norman and Zumwalt, 2014). In addition, women are in general more health conscious than men (Arganini et al., 2012).

For Sweden, the findings reveal that the Internet and social media are important sources for health related information and they compete with official information from Swedish health care. As Internet access in Sweden is high, Internet resources are easily accessible for dieters, compared to the public and private health care institutions. Furthermore, it can also be concluded from the data that some printed information (brochures and daily newspapers) are also becoming less attractive. Almost all respondents report knowing where to turn for information concerning diets and exercise, which also reflects a high health awareness of population in Sweden.

In comparison, for Malay Malaysians important sources of information for health issues were recommendations from friends and family. By getting feedback and support from these sources, they become more confident about their decision-making process. Malaysia's Internet penetration stands at 67.5 per cent (World Bank, 2015) giving rise to the increase in accessibility of social media as a tool for information sourcing. However, traditional print media such as leaflets and newspapers are still preferred as they are widely circulated; 2,995, 685 as of January – June 2015 (Audit Bureau of Circulations Malaysia, 2015) and read throughout the nation states.

Some of the Swedish respondents report ignoring and criticizing public/private health care institutions and government agencies, brochures and daily newspapers. Judging from the comments, the information provided on government agencies websites is seen by some respondents as outdated and already known, which raises the issue of the authorities addressing current trends in weight-related issues. The Swedish data reflects two opposing tendencies. Governmental agencies keep 'the plate model' and controlling calorie intake as their instructions for weight loss, which a group of the respondents in this study are critical of them and relatively few persons are using them. At the same time, a report from 2013 from the Swedish agency for health technology assessment and assessment of social services (SBU, 2013)¹ indicates that a low-carbohydrate diet, such as LCHF, is *more effective* weight loss than today's conventional advice about calorie intake, which is what a group of the respondents report to favor. (The long term effects of LCHF on other aspects of health, are, however, so far not known, hence the official policy).

Knowing where to access science-based and accurate information is essential for managing a diet and a healthy lifestyle. In the Swedish data, social media, family and friends and expert talks are considered both easiest to understand and most trustworthy; the information obtained from these sources is evaluated as most useful, which explains why the respondents choose them. Journals and blogs are considered among the easiest to understand, but are less of the rated as the most trusted. Not all nutrition information found on blogs is seen as accurate and research-based, which results in them being less trustworthy.

For the Malaysian Malays, none of the information sources is seen as both very easy to understand and very trustworthy. Only *public institutions* are seen as very easy to understand and to some extent trustworthy. *Blogs, YouTube/Vimeo* and *social media* are considered the easiest to understand but less likely to be trustworthy. Social media is, thus, judged as easy to understand in both countries, but less trusted in Malaysia, while the Malaysian respondents are more positive to the ease of using blogs and YouTube/Vimeo. This difference could be due to the younger sample population in the Malaysian data who prefer to go online in search of information but still remain cautious about what they have read.

In both Sweden and Malaysia, *public health care institutions* and *governmental agencies* are seen as high in trustworthiness, but low in understandability, which can be an additional factor why many of the respondents do not turn to these resources. In Malaysia, *expert talks to the public* and *private institutions* are also seen as very trustworthy. *Daily newspapers, leaflets, radio/TV, and alternative medicine* is seen as neither easy to understand nor trustworthy by the

¹ SBU is an independent national authority, tasked by the government with assessing health care interventions from a broad perspective, covering medical, economic, ethical and social aspects (<http://www.sbu.se/en/About-SBU/>).

respondents in both countries. Interestingly, in the Malaysian Malays data, this also applies to *private healthcare organizations*. Similar tendencies can be seen in evaluation of information.

In general, the Swedish respondents choose what to use and follow, according to their beliefs, which are, in turn, based on information sources, where the Internet (i.e. social media, blogs), journals and newspapers play a very important role; this which might override that of the official information and recommendations for a probably increasing subgroup of people in Sweden. A relatively low confidence in official health information in a considerable subgroup of respondents points to a potential problem (i.e., trend setters adopting non-official recommendations, which may or may not entail health risks). This is a conscious choice based on their own information seeking and it is a challenge for the official information sources to address this group and the findings on which they base their choices in a way that can regain their confidence. More relevant research and more discussion are needed, also involving national agencies and institutions.

Governmental sources can develop standardised health policies by leveraging on similitudes while the local healthcare providers of health care/medicine and food can be more conscious of what preferential differences may be inherent and what may be unique in different societies. For instance, these findings could be applied in Malaysia by placing more emphasis on information about health and exercise, as well as the wider context of eating healthy food and keeping a normal weight. In Sweden, the diet trends could be tackled more clearly by the national health agencies, in order to keep the confidence of citizens and an explanation about why and how results of research are disseminated could be made known.

The Malaysian Malay respondents are also at liberty to choose the type of information that is of interest to them. Considerable factors such as family/friends, blogs and radio/TV, social media and also journal articles are important sources to look for information. Although obtaining sources from governmental agencies, public and private institutions are the least preferred methods compared to the new media, the respondents seem to trust the facts provided by these institutions. The dissemination of information however from these institutions should be more widespread and simplified so as to be easily understood by more people. The situation in Malaysia is markedly different from that in Sweden where more participants seem to trust less of the official information and recommendations and make choices based on their own findings and conclusions.

In conclusion, the spectrum of information sources is fairly broad and interest in seeking information about health, food and weight is considerable in both countries. This indicates that there are relatively strong possibilities for empowering the public to take action to combat problems arising from being overweight and obese. This would require new strategies to be undertaken by government agencies and clinics taking into account the whole spectrum of other sources that people turn to for information. The diversity in sources for health information also points to a need for critical reading by the users and access to transparent evaluation of health information. Understanding different cultures and the preferences of different communities is important in adopting strategies that will have a big impact on the different communities. The outcomes of this study provide insights into the obesity attitudes of Swedes and Malaysians and their preferences for information sources. The results can contribute towards better understanding of cultural influences in the planning of health services in both countries.

Acknowledgements

The data collection in Sweden was done in line with ethical guidelines for social science research. The University of Malaya Research Ethics Committee-Non Clinical approved the questionnaire and prior consent was sought from the respondents during data collection and procedures followed.

Funding

The research reported in this paper was supported by a grant from the Swedish Research Links program of the Swedish Research Council to the SCCIL Interdisciplinary Center at the University of Gothenburg under grant number 2012-6226.

References

- Arganini, C., Saba, A., Comitato, R., Virgili, F. and Turrini, Aida (2012) 'Gender differences in food choice and dietary intake in modern Western societies', in Jay Maddock (ed.), *Public Health - Social and Behavioral Health, InTech*, DOI: 10.5772/37886, pp. 83–102, at <https://www.intechopen.com/books/public-health-social-and-behavioral-health/gender-differences-in-food-choice-and-dietary-intake-in-modern-western-societies>
- Audit Bureau of Circulations Malaysia (2015) 'ABC Circulation Figures, January 2015 – June 2015, Newspapers, West and East Malaysia Distribution', at: <http://abcm.org.my/wp-content/reports/2015/ABC-Circulation-Figures-Jan15-Jun15-Newspapers-West-and-East-Malaysia-Distribution.pdf>
- Baltar, F. and Brunet, I. (2012) 'Social research 2.0: Virtual snowball sampling method using Facebook', *Internet Research*, 22(1): 57–74.
- Brown S, Teufel J and Birch D. (2007) Early Adolescents Perceptions of Health and Health Literacy. *Journal of School Health*; 77: 7–15.
- Chang, T., Chopra, V., Zhang, C. and Woolford, S.J. (2013) 'The role of social media in online weight management: systematic review', *Journal of Medical Internet Research*, 15(11), DOI:10.2196/jmir.2852, at <http://www.jmir.org/2013/11/e262/>
- Chou, W. S., Prestin, A. and Kunath, S. (2014) 'Obesity in social media: a mixed methods analysis', *Translational Behavioral Medicine*, 4(3): 314–23. DOI:10.1007/s13142-014-0256-1.
- Corcoran, T. and Renwick, K. (2014) 'Critical health literacies? Introduction', *Asia-Pacific Journal of Public Health, Sport and Physical Education*, 5(3): 197–9.
- Department of Statistics Malaysia (2012) 'Demographic indicators', at: http://www.statistics.gov.my/portal/download_Population/files/demo/Risalah_Indikator_Demografi_Malaysia_2012.pdf
- Gallus, S., Lugo, A., Murisic, B., Bosetti, C., Boffetta, P. and La Vecchia, C. (2015) 'Overweight and obesity in 16 European countries'. *European Journal of Nutrition* 2015, 54(5): 679–689. DOI:10.1007/s00394-014-0746-4.
- Grönlund Frida (2014) 'Kvinnors ohälsosamma hälsa. Kvinnliga gymdeltagares sätt att förvärva och använda hälsoinformation [Women's unhealthy health. The ways female gym participants acquire and use health information], *Kandidatuppsats i pedagogic [Candidate thesis in pedagogy]*, Umeå universitet [Umeå University].
- Kim, J. and Yon, J. (2012) 'Obesity in the new media: A content analysis of obesity videos on YouTube', *Health Communication*, 27(1): 86–97. DOI:10.1080/10410236.2011.569003
- Mårtensson, L. and Hensing, G. (2012) 'Health literacy –a heterogeneous phenomenon: a literature review', *Scandinavian Journal of Caring Sciences*, 26: 151–60, at:

- http://www.socmed.gu.se/digitalAssets/1364/1364652_health-literacy-----a-heterogeneous-phenomenon--a-literature-review-publ.pdf
- Ministry of Health Malaysia, (2015). *Country Health Plan 10th Malaysia Plan 2011-2015 Report*. Putrajaya, Malaysia: Ministry of Health Malaysia.
- Public Health Agency of Sweden. (2013). Matvanor.
- Rich, E. (2011) 'I see her being obese!': Public pedagogy, reality media and the obesity crisis', *Health*, 15(1): 3–21. DOI:10.1177/1363459309358127.
- Robert-McComb, Norman, J.J. and Zumwalt, R.M. (eds) (2014) *The Active Female: Health Issues Throughout the Lifespan* [2nd edn.], Springer: New York.
- SBU (Swedish Council on Health Technology Assessment) (2013) *Dietary treatment of obesity: A Systematic Review*, SBU: Sweden, at http://www.sbu.se/globalassets/publikationer/content1/1/dietary_treatment_obesity.pdf
- Seidell, J.C. and Halberstadt, J. (2015) 'The global burden of obesity and the challenges of prevention', *Annals of Nutrition & Metabolism*, 66(2): 7-12.
- The Malaysian Insider (2014) 'Malaysia is Southeast Asia's fattest country', at: <http://www.themalaysianinsider.com/malaysia/article/malaysia-is-southeast-asians-fattest-country>
- Toon, K.Y. (2014) 'More folk leading sedentary lifestyles, leading to obesity'. *The Star*, 23 May 2014, at: <http://www.thestar.com.my/news/community/2014/05/23/a-big-problem-more-folk-leading-sedentary-lifestyles-leading-to-obesity-by-toon-kit-yi/>
- Wagner, C., Steptoe, A., S. Wolf M. and Wardle, J. (2009) 'Health Literacy and Health Actions: A Review and a Framework From Health Psychology', *Health Education and Behavior*, 36: 860–77.
- WHO (2013) '*Health Literacy- The solid facts*', at http://www.euro.who.int/__data/assets/pdf_file/0008/190655/e96854.pdf
- World Bank (2015) '*Internet Users per 100 people*', at <http://data.worldbank.org/indicator/IT.NET.USER.P2>